

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application.

1. (Currently Amended) A method comprising:

pre-registering each of a plurality of remote direct memory access (RDMA) buffers to a different connection of a plurality of connections;

determining that a pre-registered RDMA buffer of the plurality, which has been pre-registered for a given connection, has insufficient size to transfer data;

sending a control message indicating that a first larger RDMA buffer is to be provisioned for the given connection and that a receiving node is to provision a larger RDMA buffer;

receiving an acknowledgement message from a network corresponding to the control message, the acknowledgement message including information associated with communication with the larger RDMA buffer of the receiving node;

provisioning and registering ~~a larger~~ the first larger RDMA buffer for the given connection, wherein a second larger RDMA buffer is not ~~provisioning~~ provisioned and registered for another connection of the plurality, and wherein a size of the first larger RDMA buffer is larger than a size of the pre-registered RDMA buffer; and

transferring the data to ~~a network~~ the network using the first larger RDMA buffer.

2. (Currently Amended) The method of claim 1, further comprising:

~~sending a control message indicating that a receiver is to provision a larger RDMA buffer to receive the data; and~~

prior to said transferring, ~~receiving an~~ receiving the acknowledgement message indicating that the ~~receiver~~ receiving node has provisioned the larger RDMA buffer, wherein the information includes an address of the larger RDMA buffer of the receiving node and a remote key.

3. (Original) The method of claim 1, wherein said determining comprises comparing a size of the data to a predetermined threshold.

4. (Original) The method of claim 3, further comprising comparing sizes of a plurality of elements of an input-output vector to the predetermined threshold.

5. (Currently Amended) The method of claim 1, wherein said provisioning comprises allocating and registering the first larger RDMA buffer during a communication phase.

6. (Currently Amended) The method of claim 1, further comprising ~~wherein said provisioning comprises:~~

unregistering the pre-registered RDMA buffer; and

freeing ~~the memory~~ memory used by the pre-registered RDMA buffer.

7. (Currently Amended) The method of claim 1, wherein said transferring comprises:

copying data from a source to the first larger RDMA buffer; and

performing an RDMA transfer from the first larger RDMA buffer to the network.

8. (Currently Amended) An article of manufacture comprising:
- a machine-accessible medium that provides instructions that if executed result in a machine performing operations including,
- determining that a size of data to be transferred by remote direct memory access (RDMA) is larger than a predetermined threshold; and
- sending a message indicating that an RDMA buffer having a size larger than the predetermined threshold is to be allocated;
- receiving a message from a network corresponding to the message;
- allocating and registering ~~an RDMA~~ the RDMA buffer having ~~a size~~ the size larger than the predetermined threshold to a given connection during a communication phase of an RDMA data transfer, without allocating and registering an RDMA buffer having a size larger than the predetermined threshold for another connection.
9. (Currently Amended) The article of manufacture of claim 8, wherein the machine-accessible medium further provides instructions that if executed result in the machine performing operations comprising:
- ~~sending a message indicating that a receiver is to provision an RDMA buffer having a size larger than the predetermined threshold; and~~
- receiving the message which is an acknowledgement message indicating that the receiver a receiver has provisioned an RDMA buffer having a size larger than the predetermined threshold ~~the larger RDMA buffer.~~

10. (Previously Presented) The article of manufacture of claim 8, wherein the machine-accessible medium further provides instructions that if executed result in the machine performing operations comprising:

copying data from a source to the RDMA buffer; and

performing an RDMA transfer from the RDMA buffer to a receiving node.

11. (Currently Amended) A system comprising:

an interconnect;

one or more processors coupled with the interconnect;

a ~~dynamic random access~~ memory (~~DRAM~~) coupled with the interconnect to store data;

a network interface device coupled with the interconnect to transfer data to a network by using an Ethernet protocol;

machine-readable instructions stored and that if executed result in a machine performing operations comprising:

determining that a pre-registered remote direct memory access (RDMA) buffer that has been pre-registered for a given connection is too small to transfer data;

sending a message indicating that an RDMA buffer having a buffer size larger than a buffer size of the pre-registered RDMA buffer is to be provisioned;

receiving a message from a network corresponding to the sent message;

provisioning ~~an RDMA~~ the RDMA buffer having ~~a buffer~~ the buffer size larger than ~~a buffer~~ the buffer size of the pre-registered RDMA buffer; and

transferring the data to ~~a network~~ the network using the provisioned RDMA buffer.

12. (Currently Amended) The system of claim 11, ~~further comprising:~~

wherein sending the message comprises sending a message indicating that a receiver is to provision an RDMA buffer having a size larger than the pre-registered RDMA buffer to receive the data; and

prior to said transferring, receiving the message that is an acknowledgement message indicating that the receiver has provisioned the RDMA receive buffer.

13. (Previously Presented) The system of claim 11, wherein said determining comprises comparing a size of the data to a predetermined threshold, wherein said provisioning comprises allocating and registering the larger RDMA send buffer during a communication phase, and wherein said transferring comprises copying data from a source to the larger RDMA send buffer.

14. (Previously Presented) The system of claim 11, wherein the pre-registered RDMA buffer has a size ranging from 100 to 2,000 bytes, and wherein the provisioned RDMA buffer has a size ranging from 1,000 to 200,000 bytes.

15. (Currently Amended) A method comprising:

receiving a control message indicating to selectively provision an remote direct memory access (RDMA) buffer having a size larger than a pre-registered RDMA buffer for a given connection rather than for all connections;

provisioning the RDMA buffer;

sending an acknowledgement message indicating that the RDMA buffer has been provisioned and including information to communicate with the provisioned RDMA buffer;

receiving data into the provisioned RDMA buffer.

16. (Cancelled)
17. (Original) The method of claim 15, wherein said provisioning comprises allocating and registering the RDMA buffer during a communication phase.
18. (Original) The method of claim 15, wherein said provisioning comprises:

unregistering the pre-registered RDMA buffer; and

freeing the memory used by the pre-registered RDMA buffer.
19. (Original) The method of claim 15, further comprising copying the data from the provisioned RDMA buffer to a destination.
20. (Currently Amended) The method of claim 15, implemented in a network device comprising:

a bus;

~~a dynamic random access~~ memory coupled with the bus to store data; and

a processor having multiple cores.
21. (New) The method of claim 15, wherein the information comprises one of an address of the provisioned RDMA buffer and a key.